

CLAIMS

1. An oscillator device comprising an oscillation circuit substrate, an oscillation circuit disposed on the oscillation circuit substrate to oscillate a signal having a predetermined oscillating frequency, and a dielectric resonator for setting the oscillating frequency,

wherein the dielectric resonator includes a dielectric substrate mounted on a front surface of the oscillation circuit substrate, a TM010 mode resonator having electrodes disposed on both surfaces of the dielectric substrate, at least one of the electrodes being circular, and an excitation electrode disposed on the dielectric substrate, the excitation electrode being connected to the oscillation circuit and being coupled with the TM010 mode resonator.

2. The oscillator device according to claim 1, wherein the oscillation circuit includes a transmission line provided with a ground electrode on a back surface of the oscillation circuit substrate, and

between the two electrodes of the TM010 mode resonator, the electrode disposed on a back surface of the dielectric substrate is connected to a land disposed on the front surface of the oscillation circuit substrate, and the land is connected to the ground electrode of the transmission line via a through-hole passing through the oscillation circuit substrate.

3. The oscillator device according to claim 2, wherein, between the two electrodes of the TM010 mode resonator, the electrode disposed on the back surface of the dielectric substrate is connected to the land by using bumps.

4. The oscillator device according to claim 1, wherein the oscillation circuit includes a transmission line provided with a ground electrode on the front surface of the oscillation circuit substrate, and

between the two electrodes of the TM010 mode resonator, the electrode disposed on the back surface of the dielectric substrate is connected to the ground electrode of the transmission line disposed on the front surface of the oscillation circuit substrate.

5. The oscillator device according to any one of claims 1, 2, 3, and 4, wherein a frequency control circuit for controlling the oscillating frequency is disposed on the oscillation circuit substrate, and

another excitation electrode to be coupled with the TM010 mode resonator is disposed on the dielectric substrate, and said another excitation electrode is connected to the frequency control circuit.

6. A transmission and reception device using the oscillator device set forth in any one of claims 1 to 5.